

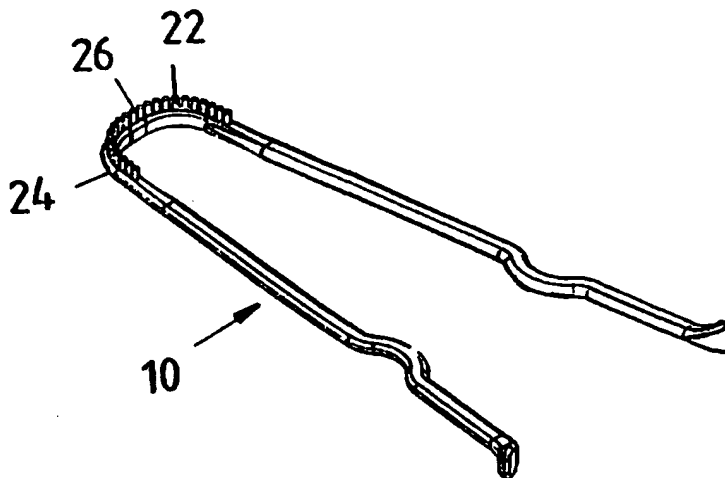


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/NO97/00233 <b>(22) International Filing Date:</b> 4 September 1997 (04.09.97) <b>(30) Priority Data:</b> 963699 5 September 1996 (05.09.96) NO PCT/NO97/00155 18 June 1997 (18.06.97) WO <b>(34) Countries for which the regional or international application was filed:</b> NO et al.  <b>(71)(72) Applicant and Inventor:</b> MØLSTER, Olav [NO/NO]; Boks 503, N-6901 Florø (NO).  <b>(74) Agent:</b> A/S BERGEN PATENTKONTOR; Strandgt. 191, N-5004 Bergen (NO).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** DEVICE FOR CLEANING WITHIN THE ORAL CAVITY**(57) Abstract**

There is mentioned a device in an instrument for cleaning within the oral cavity, comprising a handle (16) and a means for cleaning within the oral cavity on the one end of the handle (16). The device is characterised in that the means (12) comprises a first side surface (28) provided with upwardly projecting bristles (26), and a second side surface (30) defining a scraping edge. According to one embodiment the elongate edge (36), which is defined between/by the belly surface (32) and the second side surface (30), forms the scraping edge (36) of the instrument. According to another embodiment the scraping edge is defined by a ridge (37) formed at the second side surface (30), said ridge being elevated upwardly from said surface.



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DEVICE FOR CLEANING WITHIN THE ORAL CAVITY

5           The present invention relates to a device in an  
instrument for cleaning of the oral cavity as will be  
evident from the introduction of the following claim 1.  
Thus the invention relates to a cleaning instrument which  
comprises a handle element and a cleaning member connected  
10 to this comprising a scraping edge and a bristle portion.

With the present invention the aim is to alleviate  
the problem which many people have with bad breath.

The oral cavity (cavum oris) consists of teeth,  
cheeks, soft palate, tongue, mouth floor, transition folds  
15 and cheek mucous membranes. All these components can  
collect bacteria/-plaque, food residues and dead skin  
cells. With toothless people the roof of the mouth/the  
palate and floor of the mouth including the lower jaw  
(mandibula) can be a deposit for this collection of  
20 material. Several investigations have shown that thorough  
cleaning of the tongue and particularly its rear portions  
will reduce the afore-mentioned frequency of bad breath,  
that will increase the sense of taste and have the effect  
of refreshing the oral cavity. Thorough cleaning of the  
25 teeth is normal to-day in the population, but large  
geographical and social variations exist. Concerning other  
cleaning of the oral cavity then the western world is  
to-day little focussed on other than the brushing of teeth  
and interdental cleaning with tooth floss and tooth picks.

The phenomenon of bad breathe can stem from the afore-mentioned conditions, but a series of research workers have published investigations where the main problem is the rear portions of the tongue. As regards  
5 persons without teeth collections of dead skin cells, fungi and bacteria will not only occur in the prosthesis itself, but also in cheeks and portions of the palate. It is also known that dead skin cells in the mucous membranes can influence the aroma of the air from exhalation.

10 A series of instruments are known for the removal of accumulations of odour-forming material on the tongue, and reference shall be made here to GB-patent specifications 2.027.347, 2,234,903, 2.260.905 and 2.265.831. These patent specifications show a U-shaped bow which comprises  
15 a scraping edge and two handles which the user grips on, after which he can scrape the tongue with the scraping edge of the bow. However this scraping does not give a sufficient cleaning of the tongue and there is no discussion either of cleaning portions of the oral cavity  
20 as is mentioned above. In addition a cleaning instrument is known from US patent specification 1.891.864 which comprises a combination of bristles and scraping edge. This instrument is however large and broad and long and it comprises up to six rows of bristles. It will therefore  
25 take a relatively large space in the oral cavity and there is the danger that the user gets vomiting feelings. The scraping edge which in the patent is shown by the reference number 4, is constituted by a separate metal plate, and it appears to consist of a sharp edge, which in  
30 itself can lead to the tongue being caused cutting injuries, or the like.

It is therefore an object of the present invention to produce a new instrument for cleaning of the oral cavity, and which remedies the drawbacks which are outlined above  
35 for the known cleaning instruments.

Devices in the instrument according to the present invention for cleaning within the oral cavity are

characterised by the features which are evident from the characterising portion of the following patent claim 1. Preferred constructions are evident from the dependent claims.

5           According to the invention the device is used for the cleaning of the tongue, the mucous membranes, and if necessary the palate portion within the oral cavity. It is preferred to use the device together with a cleaning agent, such as a paste, gel or mouthrinse to be placed on  
10 the bristles.

          Thus the cleaning member is formed of a substantially straight or slightly curved, if desired U-shaped bow, and a first side surface of the cleaning member is designed with one or two rows of upwardly projecting bristles and  
15 the second side surface is designed with a scraping edge.

          Advantages and details concerning the instrument according to the present invention shall now be explained further with reference to the enclosed Figures, wherein:

          Figs. 1 and 2 show respectively a perspective view  
20 and a plan view of a preferred construction of the instrument according to the present invention.

          Fig. 3 shows a cross-section, partly in perspective, of the bristle-carrying portion of the instrument.

          Fig. 3a shows a cross-section of an alternative  
25 design of the scraping edge of the bristle-carrying portion of the instrument.

          Fig. 4 shows an alternative construction of a cleaning instrument according to the invention.

          Figs. 5 and 6 show preferred constructions of the  
30 instrument comprising a two-legged handle.

          Figs. 7 - 15 show alternative and preferred constructions of the cleaning instrument according to the invention comprising a one-legged handle.

          Fig. 16 shows an alternative and preferred  
35 construction of the head part of the instrument.

          Fig. 17 shows a side view of the head part of the instrument according to Fig. 16.

An instrument according to the present invention for cleaning different parts of the oral cavity is shown in Figures 1 and 2 by the reference numeral 10. The instrument comprises three main components, a front  
5 cleaning member 12, a middle section 14, and a rear handle member 16 (a shaft). The middle section 14 connects the cleaning member and the handle member 16 (the shaft).

The cleaning member 12 of the instrument 10 preferably forms a bow-shaped U-shaped bow profile, where  
10 each of the legs of the U shape is further connected, via the middle section 14, to the respective elongate handle parts 18,20. The handle parts (the legs) 18,20 are essentially designed so that the instrument can be gripped by the user's own hand with the thumb about the one leg 18  
15 of the handle, while the other fingers are laid about the other handle 20.

The U-shaped bow-cleaning member 12 further comprises a first (bristle-carrying) side surface 22 and a second (scraping element-carrying) side surface 24. The first and  
20 second side surfaces 22 and 24 are substantially oppositely directed when looking in towards the belly part or back part of the bow (U-shape) according to Fig. 1, and form planes which are substantially parallel to the directions of the handles (the shafts) 18,20. The row of  
25 bristles 26 can be imbedded in the side surface, if desired be pressed into holes which are punched out in the side surface of the bow member.

The cross-section for the rod/bow can be square or rectangular with rounded corners, or can be circular, oval  
30 or the rod can have a composite cross-section of these forms.

With reference to Fig. 3, the bow member comprises the first (bristle-carrying) side surface 28, and the second (scraper element-carrying) side surface 30, these  
35 side surfaces being substantially oppositely directed. The wall-surface (belly side) 32 which faces inside the U-shape of the bow, and the wall surface 34 (back side)

facing out of the U, connect respectively the two side surfaces 28 and 30. The side surfaces 28 and 30 form generally a right angle with the belly and back sides, but the elongate edge between the surfaces is rounded. The elongate edge which is defined between/by the belly surface 32 and the second side surface 30, form scraping edge 36 of the instrument. The two scraping edge-forming surfaces, namely the belly surface 32 and the second surface 30 can besides form dissimilar angles with each other, and the longitudinal edge 36 which is formed between them, will then have a varying sharpness dependent upon what the angle is between the surfaces 30 and 32. Obviously the sharpness is also regulated by the rounding of the edge 36. The edge 36 must be so much rounded that the user does not cut himself in the tongue, in the skin or the mucous membranes when he draws in normal fashion the instrument over the tongue in order to perform the scraping. Fig. 3 shows an alternative and preferred cross-sectional profile of the rod which forms the cleaning member 12. The rear side 34 and the second side surface 30 form together an arcuate shape, and preferably an approximately circular cross-section.

According to another preferred embodiment of the device of the invention, which appears on figure 3a, the scraping edge is defined by a ridge formed at the second side surface 30 and an extension of the belly side 32, said ridge being elevated upwardly from side surface 30 and extends along the arcuate shape of the bow. The ridge may be elevated from the surface 30 in a range of approximately 1-3 millimeters. The ridge top edge is rounded in order not to effect cut injuries in the tongue in use.

The bristles 26 are installed as a row of bristles in the first side surface 28. The rows of bristles consists of a number of bundles of bristles which are each imbedded or pressed down in holes in the bow. The bristles 26 can be up to 8 mm. (millimetres) high, but preferably have a height of 3 mm., and can consist of bristles of dissimilar

hardness. In the Figs. 1 - 3 a cleaning instrument is shown having one row of bristles, but two rows of bundles of bristles can also be used.

5       The distance or breadth between the outer edges of the front cleaning member 12 (or head portion) is denoted A on figure 2. The instrument according to the invention can be made with dissimilar breadths A adapted for adults and children. For an adult person the cleaning member 12 is made with a breadth of about 2,5-4 cm. something which  
10       approximately corresponds to the breadth of the tongue at the root of the tongue with an adult person. For children a breadth A of 2-2,5 cm may be suitable. An universal instrument intended for both children and adults may have a breadth (A) of 2-3 cm.

15       In Fig. 4 an alternative construction of the cleaning instrument according to the invention is shown. According to this alternative the instrument comprises only one handle 40, designed approximately as a conventional toothbrush. The one end of the handle 40 is connected to a  
20       transverse head portion 42 which then constitutes the cleaning member 12. The cleaning member has generally the same design with respect to the bristles 26, the scraping edge 36, the cross-sectional form, and the breadth as shown in Figs. 1 - 3 and discussed above. According to an  
25       alternative embodiment the head portion can be totally straight, as is indicated in Fig. 4. The handle is fastened midway between outer ends of the head portion 42.

      According to an alternative construction both side surfaces 28 and 30 can be provided with a row of bristles.  
30       In order that the one edge shall function as a scraping edge the type of bristle installed ought then to be of a somewhat harder type than the row of bristles 26 on the opposite edge. This means that the instrument according to the invention can be equipped with separate rows of  
35       bristles having different softnesses.

      There shall now be outlined how the cleaning instrument according to the invention is to be used.



The instrument 10 is gripped by the hand of the user and is guided backwards to the back portions of the tongue with the bristles 26 facing towards the rear of the tongue. Some scrubbing movements are undertaken forwards and backwards in the longitudinal direction of the tongue in order to loosen the material from the surface of the tongue, and that which sits in depth. In order to achieve a satisfactory scrubbing the instrument must be pressed down against the tongue with a given force.

Thereafter the instrument is taken out of the mouth, and it is turned so that the scraping edge faces towards the surface of the tongue. Again the instrument is guided backwards to the back portions of the tongue. With a given pressure a scraping of the tongue is undertaken by drawing the utensil from the back portions of the tongue and forwards to the front portion (the tip of the tongue). This operation is repeated four or five times, and one will then be able to see that a series of slime/plaque/bacteria has collected in the front portions of the tongue or that it lies as a coating on the scraping edge. This material is rinsed out of the mouth with clean water from the tap.

Thereafter the instrument is guided inside the mouth again, and now with the working bristles against the cheek mucous membranes on the right and then on the left side. The working edge is drawn thereafter 3 - 4 times from the back portions at the wisdom tooth region towards the corner of the mouth. This operation is repeated correspondingly on the opposite side.

During the scrubbing it is preferred that a cleaning agent is used. This can be placed on the tongue before the scrubbing with the bristles starts. Alternatively the cleaning agent can be placed on the row of bristles whereby it is scrubbed out over of the surface of the tongue. The cleaning agent can comprise a paste, gel, powder or have another suitable consistency. A paste can for example comprise conventional toothpaste from a tube

and which is squeezed out and placed as a stripe up on or down in the row of bristles. Then it is ensured that the paste is spread satisfactorily out over the tongue.

5 With persons who do not have teeth one is also able to utilise the inventive instrument to clean the palate portion. The bristles are guided backwards to the transition between the hard and the soft palate, and one brushes forwards and to the side with small scrubbing movements.

10 The Figures 5a-b, 5c-d, and 6 show three constructions where the cleaning head portion is roughly the same as discussed previously in connection with the Figures 1 - 2, while the difference lies mainly in the design of the handle member 16.

15 Figure 5a-b show a variant of an instrument according to the invention in a plan view and a side view respectively, while figure 5c-d shows perspective views seen from above and below respectively of the instrument.

20 According to the construction of Fig. 5a-b and 5c-d the handle legs 18,20 are broader in the plane section than the middle piece 14 and the head member 12. Further the handle legs 18,20 comprise like designed and laterally (from each other) directed concavities 50-52, where a person places the thumb and the forefinger during use of the instrument. The Figures 5a-b and 5c-d respectively show two variants of each other, the differences in these lying in the head portion. In the construction according to Figure 5a-b the shorter front bristle-carrying portion is approximately rectilinear, while in the construction according to Fig. 5c-d the head portion forms approximately a semi-circle.

25 According to Fig. 6 the right handle leg 20 is fashioned having a wave-shaped design with concavities 54,56,58 adapted for the placing of the user's fore, middle and ring fingers. This solution will give a still better control in the use of the instrument.

35 Fig. 7-12 show examples of cleaning instruments

according to the invention comprising one legged handles,  
and where the middle piece 14 and the cleaning head 12  
have generally the same form as the example according to  
Fig. 1 - 2. The middle piece 14 and the cleaning head form  
5 a bow-shaped oblong closed ring 60 one end of which  
comprises the head member 12, while the other end extends  
over into the handle 40 in a transition region 62.

The transition region 62 between the middle portion  
60 and the handle member is in plan view designed with  
10 concave sides, so that there are formed one or more  
ring-shaped neck portion-forming grooves in the transition  
portion. The whole or parts of the groove can be designed  
with a rough surface. When the user grips the handle with  
his thumb and forefinger placed on each side of the neck  
15 portion, and against the rough surfaces, this gives a  
better grip. In the handle there can also be designed a  
number of small depressions, or a number of small  
elevations (warts) in the surface for improving the  
gripping characteristics of the handle.

20 Fig. 7 shows a construction where the leg of the  
middle piece 60 converges/tapers off somewhat forwards  
towards the head portion, and where in the neck portion  
there are formed a number of rough portions round the  
periphery of the neck portion.

25 Fig. 8 shows an embodiment where the leg of the  
middle piece 60 extends straight forwards towards the  
arcuate head portion 12, and where the tapered neck  
portion, which is formed with a number of rough portions  
around the periphery of the neck portion, has a somewhat  
30 larger longitudinal dimension than the example according  
to Fig. 7.

Fig. 9 also shows a construction where the leg of the  
middle piece 60 extends straight forwards towards the  
arcuate head portion 12, and where the whole of the  
35 tapered neck portion 62 is formed as a rough portion  
around the periphery of the neck portion, and has a length  
corresponding to the example according to Fig. 8.

The example according to Fig. 10 does not comprise any tapered neck portion in the transition between the handle member 40 and the middle portion, as the previous examples. This example comprises instead several coarse  
5 grooves 61 in the upper and under side, that is to say in the middle portion which defines that region where the thumb and forefinger are placed. In this construction also the leg of the middle piece 60 extends straight forwards towards the arcuate head portion 12.

10 Fig. 11 shows two perspective views (obliquely from above and below respectively) of a variant of the cleaning instrument according to Fig. 10, the grooves 61 extending here around the whole of this part of the shaft 40 or the handle member 40. Further the shaft 40 is somewhat  
15 narrower than in the construction of Fig. 10.

Fig. 12 shows a similar construction of the cleaning instrument corresponding to Fig. 10, but where the marked tapered neck portion from the previously discussed solutions is retained. In this construction the shaft 40  
20 is still somewhat narrower than in the construction according to Fig. 11.

Fig. 13 shows a construction where the handle element extends with a gradually greater breadth towards the middle portion 60 which in turn becomes gradually broader  
25 (diverges) forwards towards the head portion. The arcuate head portion 12 with the row of bristles 26 is designed as in the former examples.

Fig. 14 and 15 show two constructions where the middle portion 60 extends directly over into the handle  
30 element 40, and where these are equally broad, that is to say that side edges of the instrument extend in parallel. According to the example of Fig. 14 the handle 40 comprises a through round hole 64 at the transition to the middle portion 60 and which the user partly grips into  
35 when he is to hold the instrument. In the example of Fig. 15 said hole 64 is placed at the back end of the handle 40.

Figs. 16 and 17 show an instrument with a two legged handle where respective side surfaces 28 and 30 form convex surfaces. The head portion thereby approximately acquires a cigar shape, as is especially evident from Fig. 17.

It is evident that all of the cleaning instruments with a one-legged handle, see the Figures 7 - 15, comprise a larger front open portion 66 which is surrounded by the front part of the handle, the middle portion-leg and the head member 12 projecting forwardly from there. On this point they resemble the construction with two legs. The large opening 66 functions so that when the user places the instrument backwards towards the root of the tongue, the front parts of the tongue can partially extend through the opening 66. If the opening 66 became "closed" by a sheet material, this would prevent the flexible use of the instrument according to the invention.

The cleaning instrument which is shown in the enclosed Figures and discussed in the foregoing can preferably be made of a suitable plastic material, that is to say plastic materials which are usually used in the manufacture of toothbrushes and similar instruments. However it is also possible to make the cleaning instrument of metals, but plastic materials are preferred.

With the described construction of the instrument according to the invention for cleaning of the regions within the oral cavity, the features can now be combined which apply to the loosening and thereafter the scraping of material which is collected in various parts of the oral cavity and which creates bad breath. Thus this constitutes a big improvement relative to the previously known instruments.

P A T E N T   C L A I M S .

1. Device in an instrument for cleaning within the oral  
5 cavity, comprising a handle element (12) and connected to  
this a cleaning member (14) comprising a scraping edge  
(36,37) and a bristle portion (26), characterised in that  
the cleaning member (14) is formed by a substantially  
straight or slightly arcuate, if desired U-shaped, bow,  
10 and a first side surface of the cleaning member is  
designed with one or two rows of upwardly projecting  
bristles (26) and a second side surface (30) is defining  
the scraping edge (36,37).
- 15 2. Device in accordance with claim 1, characterised in  
that the cleaning bow (14) has a substantially  
quadrangular cross-section, and with rounded longitudinal  
edge portions where one or more of the edge portions are  
prepared for forming the scraping edge, and where the one  
20 or more rows of bristles are mounted projecting upwardly  
from one of the side surfaces of the bow.
3. Device in accordance with claim 1 - 2, characterised in  
that the cleaning bow (14) comprises a first side surface  
25 (28) provided with upwardly projecting bristles (26), and  
an edge portion designed as the scraping edge (36).
4. Device in accordance with claim 1, characterised in  
that the cleaning bow has a substantially round or oval  
30 cross-section, and with one or more longitudinal side  
surfaces where adjacent surfaces form a scraping edge in  
that said surfaces form an angle of about 90° with each  
other, and where the one or more rows of bristles are  
mounted projecting upwardly from one of the surfaces of  
35 the bow.

5. Device in accordance with one of the preceding claims. characterised in that the side surface (28) comprises regions without bristles (26).

5     6. Device in accordance with one of the preceding claims, characterised by a single handle member (40) one end of which is connected to a substantially transversely placed bar-shaped head member (42) which forms the cleaning member and which comprises the rows of bristles (26)  
10    arranged mutually opposite and the scraping edge (36).

7. Device in accordance with claim 1, characterised in that the extension to the legs of the U-shaped head member (12) passes over into a middle portion (60) and extends  
15    further together to form a single handle member (40), whereby the handle member (40) together with a middle portion (60) and the head member (12) define an oblong opening (66).

20    8. Device in accordance with claim 7, characterised in that in the middle portion (60) the legs pass in parallel (Fig. 8,9,10,12,14,15) forwards towards the handle member (40).

25    9. Device in accordance with claim 7, characterised in that in the middle portion (60) the legs pass convergingly (Fig. 13) forwards towards the handle member (40).

10. Device in accordance with claim 7, characterised in  
30    that in the middle portion the legs pass divergingly (Fig. 7) forwards towards the handle member (40).

11. Device in accordance with one of the preceding claims, characterised by the handle member comprising convex  
35    surface portions or grip-promoting means adapted to fingers of a user, in order to improve the grip of the user about and the control of the cleaning instrument.

12. Device in accordance with claim 11, characterised in that the grip-promoting means comprises rough regions, regions with grooves, a number of depressions, a number of elevations, or though openings through the handle (40).

5

13. Device in accordance with claim 1, characterised in that side surfaces (28) and (30) respectively of the head portion (12) form convex surfaces, for an approximately cigar-shaped head portion, as shown in Fig. 17.

10

14. Device in accordance with claim 1, characterised in that the bristles (26) have a height of up to 8 mm. (millimetres), preferably about 3 mm.

15

15. Device in accordance with claim 1, characterised in that bundles of bristles are utilised of dissimilar hardness.

20

16. Device in a cleaning instrument for cleaning within the oral cavity, characterised in that it is designed as shown in the accompanying Figures.

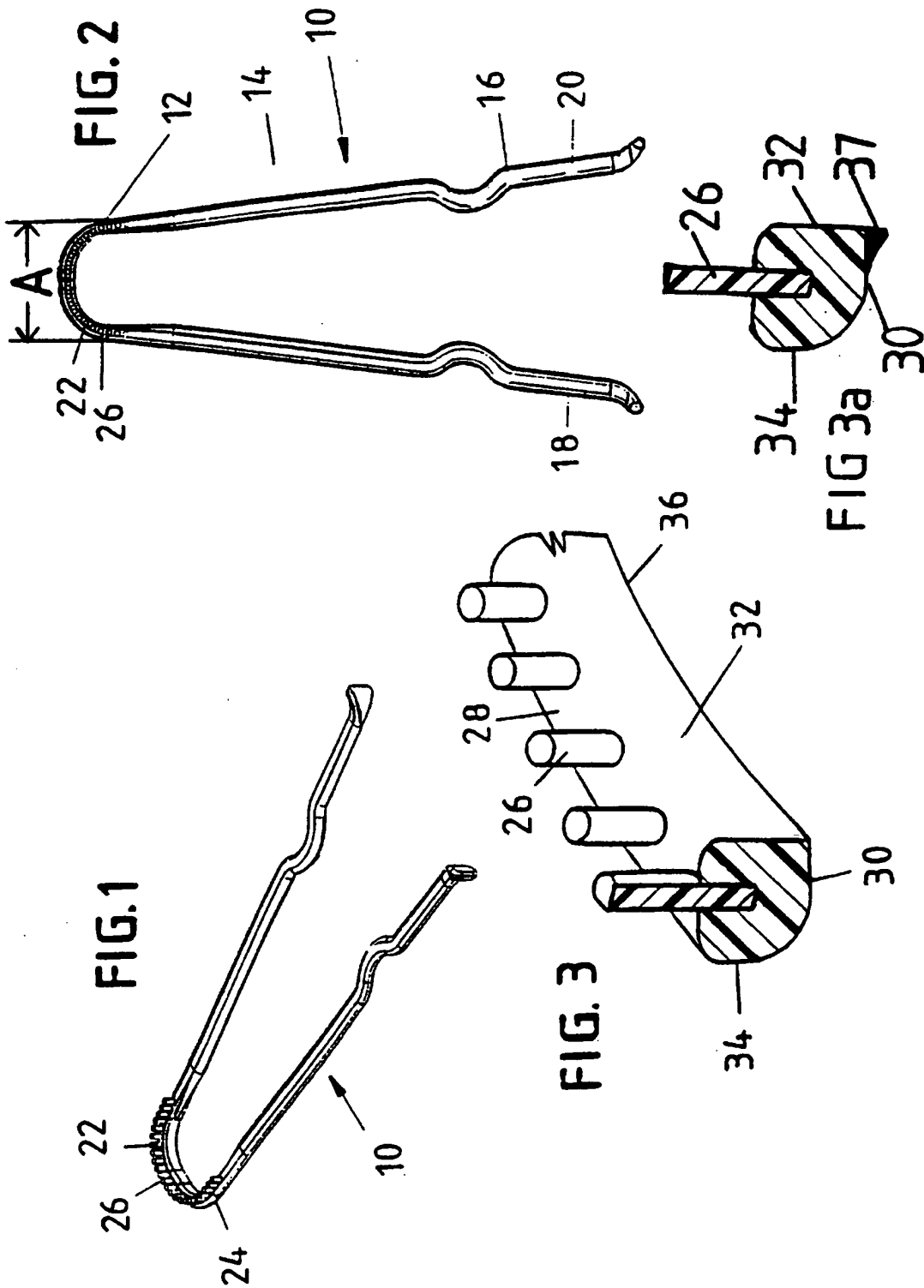
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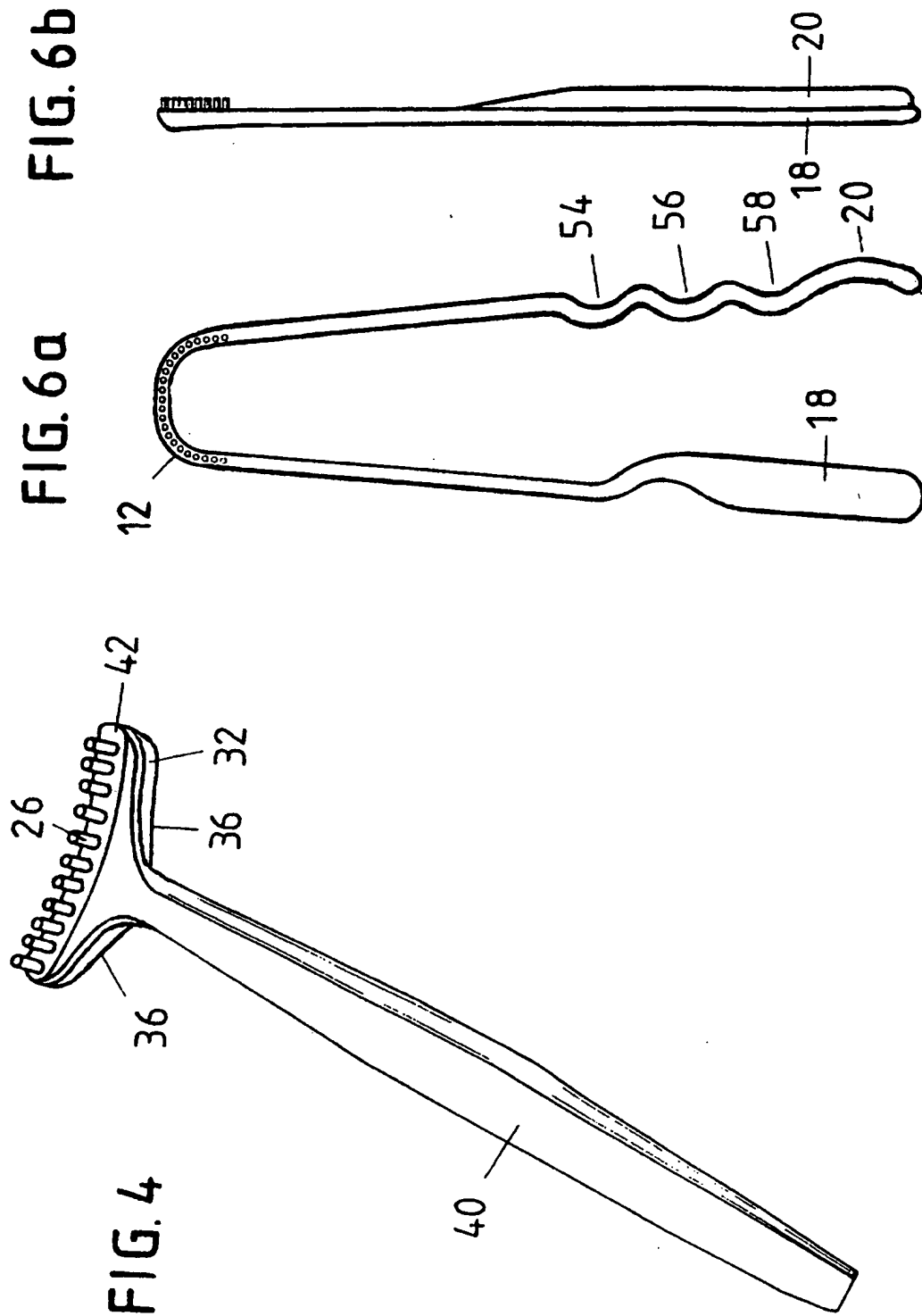
17. Use of the device according to claims 1 - 6 for cleaning of the tongue, cheek mucous membranes, and if desired the palate portion within the oral cavity.

30

18. Use in accordance with claim 17, where the device is utilised together with a cleaning agent, such as a paste, gel or mouthrinse to be placed on the bristles.







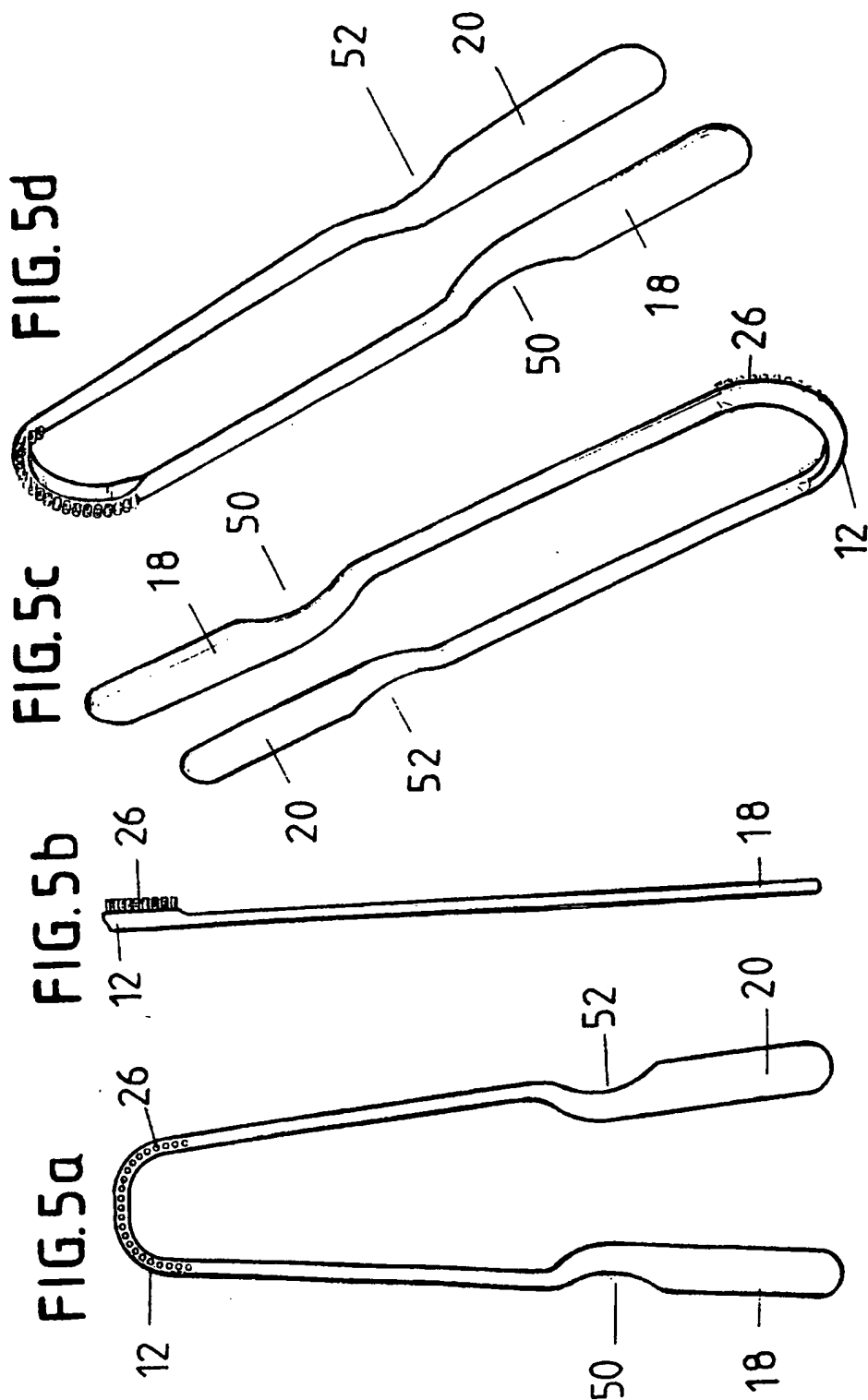


FIG. 8b

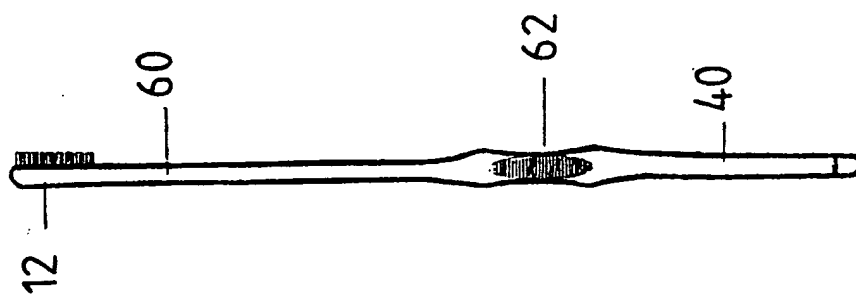


FIG. 8a

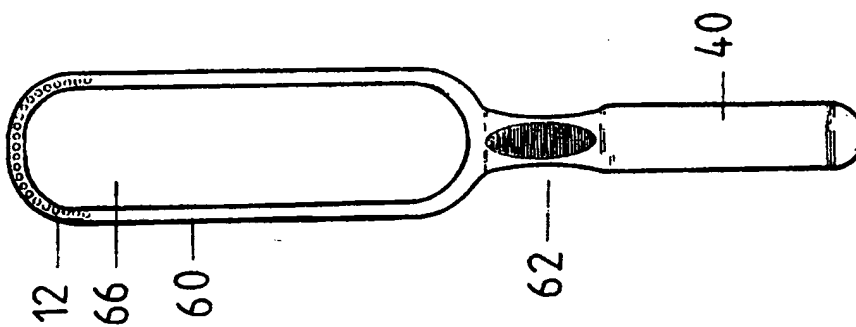


FIG. 7b

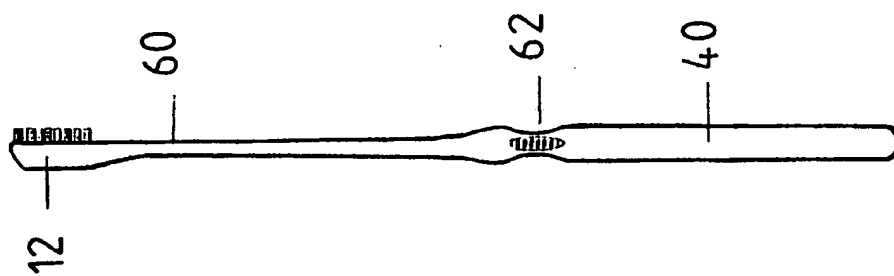


FIG. 7a

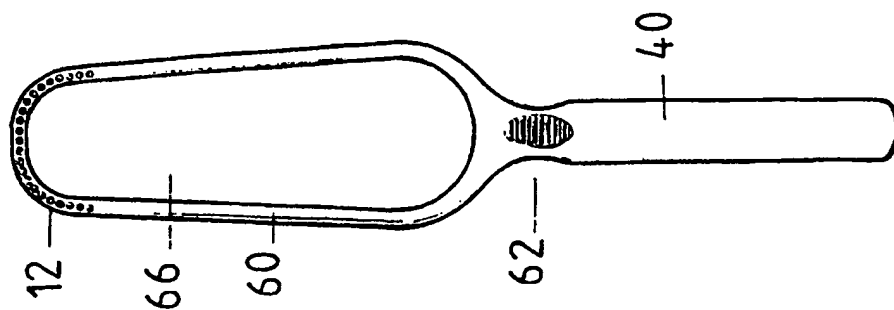


FIG.9a

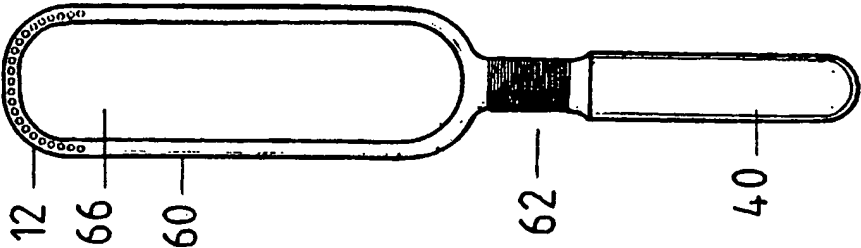


FIG.9b

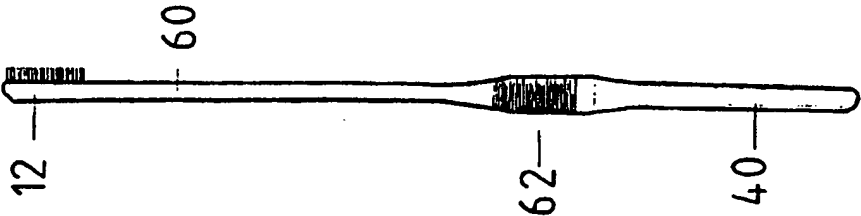


FIG.10a

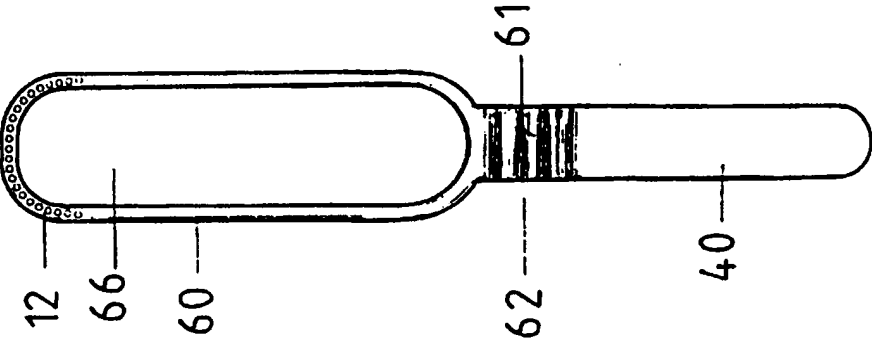
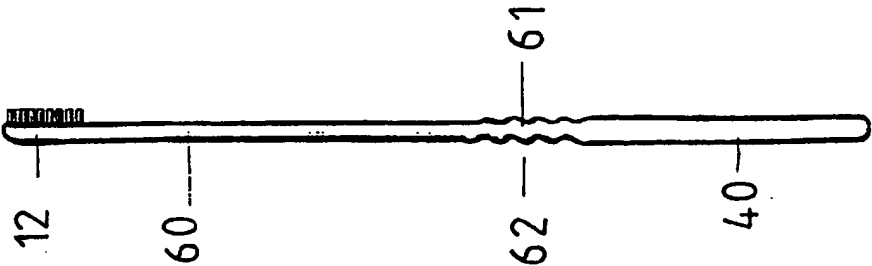


FIG.10b



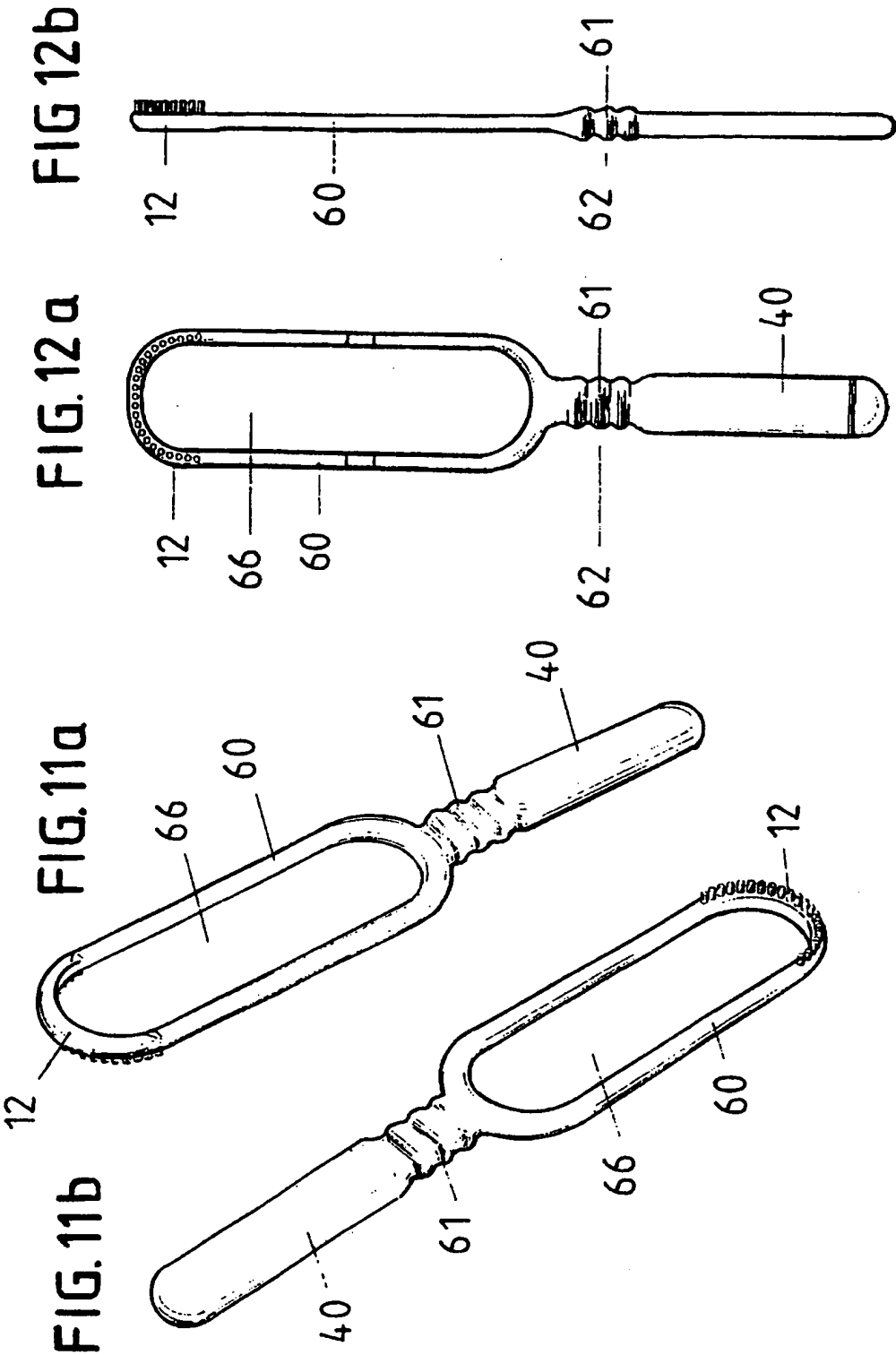


FIG.14b



FIG.14a

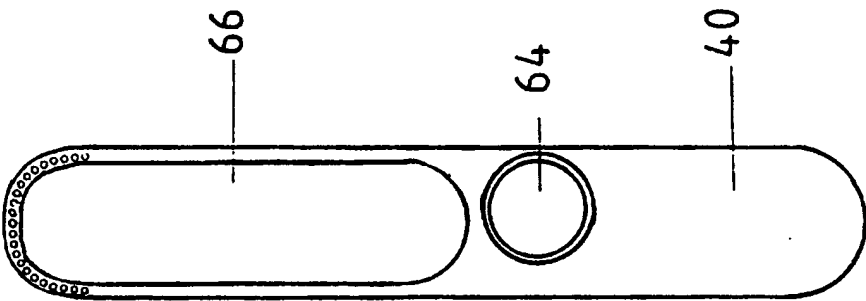


FIG.13b

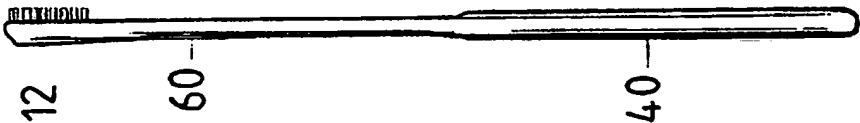


FIG.13a

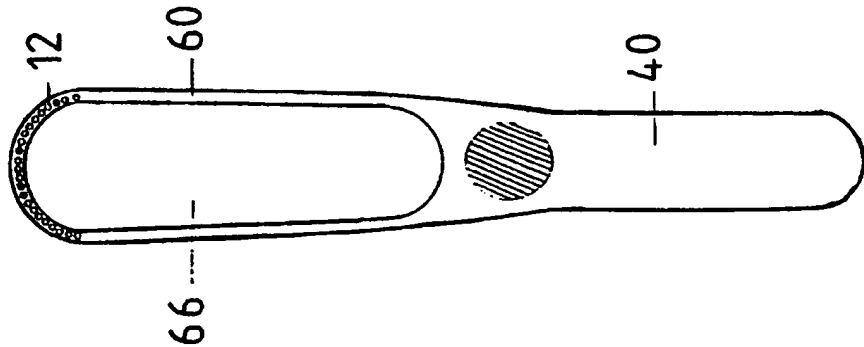
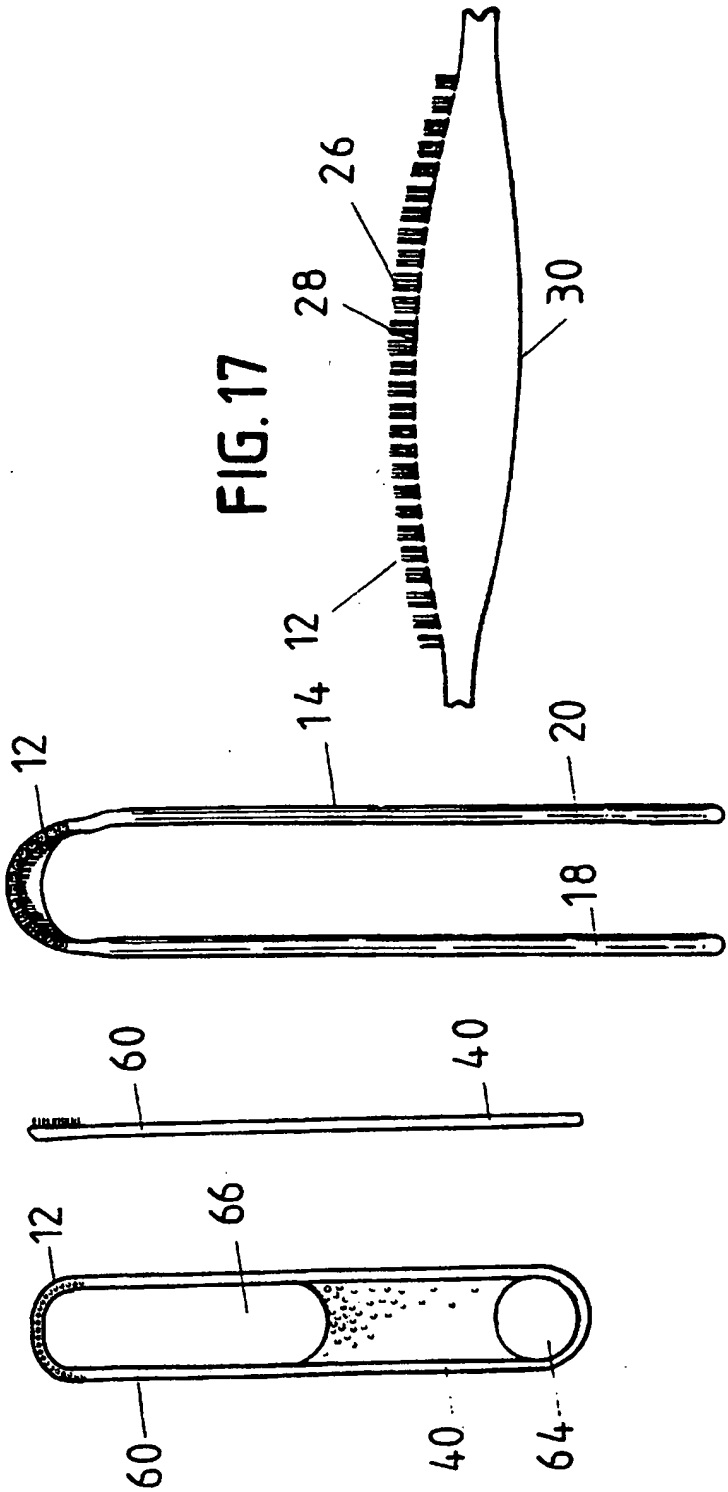


FIG.15a    FIG.15b    FIG.16





## INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 97/00233

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61B 17/24, A61C 17/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A61B, A61C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 697336 A (I. HAGERTY), 8 April 1902 (08.04.02), figure 1 --	1-18
A	GB 2234903 A (KARPRIN INTERNATIONAL LIMITED), 20 February 1991 (20.02.91) --	1-18
A	GB 2260905 A (RITA PRANJIVAN PATEL), 5 May 1993 (05.05.93) --	1-18
A	US 1891864 A (C. P. BARRETT), 20 December 1932 (20.12.32) --	6



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

15 December 1997

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 97/00233

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 773038 A (SAMUEL VASCONCELOS CALDERON), 17 April 1957 (17.04.57)  -- -----	7

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/12/97

International application No.  
**PCT/NO 97/00233**

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	697336	A	08/04/02	NONE	
GB	2234903	A	20/02/91	NONE	
GB	2260905	A	05/05/93	NONE	
US	1891864	A	20/12/32	NONE	
GB	773038	A	17/04/57	NONE	